What is claimed is:

1. A motor driving system for driving an induction motor with a rotation frequency detector, wherein said induction motor drives a load, and said rotation frequency detector detects a rotation frequency of said induction motor, comprising:

a variable speed driving unit connected to said induction motor and having a capacitance at output, wherein said variable speed driving unit rectifies first 3-phase AC power to produce DC power, and converts the DC power into second 3-phase AC power with a frequency, and drives said induction motor with the second 3-phase AC power; and

an inverter control unit which generates a frequency instruction and a temporary current instruction based on said detected rotation frequency and a rotation frequency instruction at least, corrects said temporary current instruction based on at least one of first correction depending on said capacitance and second correction depending on a predetermined frequency component of said temporary current instruction to produce a current instruction, and controls said variable speed driving unit based on said frequency instruction and said current instruction.

2. The motor driving system according to claim

1, wherein said variable speed driving unit comprises:

a rectifying unit which rectifies the first 3-phase AC power in response to said current instruction to produce the DC power; and

a current type inverter having said capacitance at the output, wherein said current type inverter converts the DC power into the second 3-phase AC power with the frequency in response to said frequency instruction.

3. The motor driving system according to claim 1, wherein said inverter control unit comprises:

a first correcting section which corrects said temporary current instruction for current flowing into said capacitance in said first correction to produce said current instruction.

4. The motor driving system according to claim 3, wherein said first correcting section corrects said temporary current instruction based on a first correction factor to produce said current instruction,

wherein said first correction factor is determined based on said capacitor, a self-inductance of a stator of said induction motor stator, a mutual inductance between the stator and a rotor in said induction motor, a self-inductance of the rotor of the induction motor, a resistance of the stator of the

induction motor, a resistance of the rotor of the induction motor rotor, and slide.

5. The motor driving system according to claim 1, wherein said inverter control unit comprises:

a second correcting section which corrects said temporary current instruction based on a second correction factor in said second correction to produce said current instruction, wherein said second correction factor is determined such that said predetermined frequency component is set to a predetermined value.

6. The motor driving system according to claim 1, wherein said inverter control unit comprises:

a first correcting section which corrects said temporary current instruction for current flowing into said capacitance in said first correction to produce a next temporary current instruction; and

a second correcting section which corrects said next temporary current instruction based on a second correction factor in said second correction to produce said current instruction, wherein said second correction factor is determined such that said predetermined frequency component is set to a predetermined value.

7. The motor driving system according to claim 6, wherein said first correcting section corrects said temporary current instruction based on a first correction factor to produce said next temporary current instruction,

wherein said first correction factor is determined based on said capacitor, a self-inductance of a stator of said induction motor stator, a mutual inductance between the stator and a rotor in said induction motor, a self-inductance of the rotor of the induction motor, a resistance of the stator of the induction motor, a resistance of the rotor of the induction motor rotor, and slide.

8. An inverter control apparatus for controlling a variable speed driving unit which rectifies first 3-phase AC power to produce DC power, and converts the DC power into second 3-phase AC power with a frequency to drive an induction motor, comprising:

a frequency instructing section which generates a torque instruction based on a rotation frequency of said induction motor and a rotation frequency instruction at least and controls the frequency of the second 3-phase AC power based on said torque instruction and the rotation frequency of said induction motor; and

a current instructing section which generates

a temporary current instruction from said torque instruction, corrects said temporary current instruction based on a capacitance and an impedance of said induction motor, and controls said variable speed driving unit based on said corrected current instruction, said variable speed driving unit having said capacitance at output connected to said induction motor.

9. The inverter control apparatus according to claim 8, wherein said current instructing section further corrects said corrected current instruction such that a predetermined frequency component of said corrected current instruction is set to a predetermined value.

10. An inverter control apparatus which outputs a control signal to a variable speed driving apparatus which drives an induction motor in a variable speed in response to said control signal, comprising:

a control signal generating section which generates said control signal based on a capacitance at an output terminal set of said variable speed driving apparatus which is connected to said induction motor at the output terminal set.

11. The inverter control apparatus according to

claim 10, wherein said control signal is determined based on parameters associated with a rotor and a stator of said induction motor.

12. The inverter control apparatus according to claim 11, wherein said control signal satisfies the following equation:

$$Idc^*=Kc \cdot Id^*$$

where

Idc*: said control signal,

Id*: an auxiliary control signal to be outputted as said control signal when said capacitance is not considered,

Kc: a coefficient Kc determined based on a self-inductance of a stator of said induction motor, a mutual inductance between the stator and a rotor of said induction motor, a self-inductance of the rotor of said induction motor, a resistance of the stator of said induction motor, a resistance of the rotor of said induction motor, and a slide quantity.

13. The inverter control apparatus according to claim 10, wherein said control signal generating section generates said control signal to compensate for a capacitor current flowing into said capacitance.

14. The inverter control apparatus according to

claim 10, wherein said control signal generating section generates said control signal based on a frequency instruction signal to instruct a frequency of an output of said variable speed driving apparatus, a self-inductance of a stator of said induction motor, a mutual inductance between said stator and a rotor in said induction motor, a self-inductance of said rotor of said induction motor, a resistance of said stator of said induction motor, a resistance of said rotor of said induction motor, a slide quantity of said induction motor, in addition to said capacitance.

15. An inverter control apparatus which outputs a control signal to a variable speed driving apparatus which drives an induction motor in a variable speed in response to said control signal, comprising:

a control signal generating section which generates said control signal based on a frequency component contained in an input signal and a remaining frequency components of said input signal.

16. The inverter control apparatus according to claim 15, wherein said control signal generating section multiplies said input signal and a reciprocal of a ratio of said frequency component to said input signal and generates said control signal based on the multiplication result.

17. An inverter control apparatus which outputs a control signal to a variable speed driving apparatus which drives an induction motor in a variable speed in response to said control signal, comprising:

a capacitor correction signal generating section which generates a capacitor correction signal based on a capacitance connected with an output terminal set of said variable speed driving apparatus; and

a control signal generating section which generates said control signal based on an inverter frequency component contained in said capacitor correction signal and a remaining frequency component of said capacitor correction signal other than said inverter frequency component.

18. A motor driving system comprising:

a variable speed driving apparatus which supplies an AC control power generated based on a control signal to an AC motor to drive said AC motor in variable speed; and

an inverter control apparatus which outputs said control signal to said variable speed driving apparatus,

wherein said variable speed driving apparatus comprises:

a rectification section which rectifies AC

power to generate DC power; and

an inverter section which generates said AC control power from said generated DC power,

said inverter control apparatus generates said control signal based on a capacitance connected with an output terminal set of said variable speed driving apparatus, an inverter frequency component of an input signal and a remaining frequency component of said input signal other than said inverter frequency component, and outputs said control signal to said rectification section.